

SECTION III—REMARKS

This Amendment is in response to the Office Action mailed December 18, 2003. Claims 1 and 12 are amended herein to enhance their clarity, claims 23-33 are canceled and new claims 34-44 are added. Claims 1-22 and 34-44 remain pending in the application. Applicants respectfully request reconsideration of the application and allowance of all pending claims in view of the above amendments and the following remarks.

Drawing Objections

The Examiner objected to the drawings because the reference numbers are drawn by hand, and required that Applicants furnish either a proposed drawing correction or corrected drawings in response to the Office Action.

Applicants respectfully traverse the Examiner's objection. Applicants can find no requirement that reference numerals in drawings be drawn by machine. Put another way, there appears to be no rule that prohibits hand-drawn reference numerals. Nonetheless, to expedite allowance and issue of the present application, Applicants have included with this amendment a substitute set of drawings in which the hand-drawn reference numerals have been replaced with more formal machine-drawn numerals. Applicants submit that this overcomes the Examiner's objection and respectfully request withdrawal of the objection.

Specification Objections

The Examiner objected to the specification because of the language "that is the exposed" at page 5, line 23. The Examiner asserts that this language is informal and required that it be changed to "that is exposed" for formality. Applicants have amended the sentence in question as suggested by the Examiner, and thank the Examiner for her careful reading of the specification. Applicants have reviewed the remainder of the specification and found no other such informalities. Applicants submit that these amendments overcome the Examiner's objections and respectfully request withdrawal of the objections.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1-2, 8-9, 11-13, 16, 19-20 and 22 as anticipated under 35 U.S.C. § 102(b) by U.S. Patent Application Publication No. 2002/0074238 to Mayer et al ("Mayer"). Applicants respectfully traverse the Examiner's rejections. A claim is anticipated only if each and every element, as set forth in the claim, is found in a single prior-art reference.

MPEP § 2131; *Verdegaal Bros. v. Union Oil of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). As explained below, Mayer cannot anticipate these claims because it does not disclose every element and limitation recited therein.

Claim 1, as amended, recites a process combination including providing a wafer, the wafer comprising an inter-layer dielectric (ILD) having a feature therein, an under-layer deposited on the ILD, a barrier layer deposited on the under-layer and a conductive layer deposited on the barrier layer; exposing the barrier layer; placing the wafer in an electrolyte, such that at least the barrier layer is immersed in the electrolyte; and “applying an electrical potential between the wafer and an electrode immersed in the electrolyte until at least part of the barrier layer is removed.” Mayer does not disclose, teach or suggest a combination including these limitations. Instead, Mayer teaches that electrolysis is only used to remove metallic layers from the surface of a wafer. *See, e.g.*, Figure 2A, box 211; Figure 3A, box 304; paragraph [0042]; paragraph [0078]. Mayer therefore cannot disclose, teach or suggest a combination including “applying an electrical potential between the wafer and an electrode immersed in the electrolyte until at least part of the barrier layer is removed.” Applicants submit that Mayer therefore cannot anticipate claim 1 and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 2, 8-9 and 11, if an independent claim allowable, then any claim depending therefrom is also allowable. *See, e.g.*, MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 1, as amended, is in condition for allowance. Applicants therefore respectfully submit that claims 2, 8-9 and 11 are therefore also allowable by virtue of their dependence on an allowable independent claim, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Claim 12, as amended, recites a process combination including providing a wafer, the wafer comprising an inter-layer dielectric (ILD) having a feature therein, an under-layer deposited on the ILD, and a barrier layer deposited on the under-layer, and a conductive layer deposited in the feature; placing the wafer in an electrolyte, such that at least the barrier layer is immersed in the electrolyte; and “applying an electrical potential between the wafer and an electrode immersed in the electrolyte until at least part of the barrier layer is removed.” As discussed above in connection with claim 1, Mayer does not disclose, teach or suggest a

combination including “applying an electrical potential between the wafer and an electrode immersed in the electrolyte until at least part of the barrier layer is removed.” Applicants submit that Mayer therefore cannot anticipate claim 12 and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 13, 16, 19-20 and 22, if an independent claim allowable, then any claim depending therefrom is also allowable. *See, e.g.,* MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 12, as amended, is in condition for allowance. Applicants respectfully submit that claims 13, 16, 19-20 and 22 are therefore also allowable by virtue of their dependence on an allowable independent claim, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

New claim 34 recites a process combination including providing a wafer, the wafer comprising an inter-layer dielectric (ILD) having a feature therein, an under-layer deposited on the ILD, a barrier layer deposited on the under-layer and a conductive layer deposited on the barrier layer; exposing the barrier layer; and “electrolytically removing at least part of the barrier layer.” As discussed above in connection with claim 1, Mayer does not disclose, teach or suggest a combination including “electrolytically removing at least part of the barrier layer.” Applicants submit that Mayer therefore cannot anticipate new claim 34, and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding new claims 35-44, if an independent claim allowable, then any claim depending therefrom is also allowable. *See, e.g.,* MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, new claim 34 is in condition for allowance. Applicants respectfully submit that claims 35-44 are therefore also allowable by virtue of their dependence on an allowable independent claim, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 3-7, 10, 14-15, 17-18 and 21 under 35 U.S.C § 103(a) as obvious in view of, and therefore unpatentable over, Mayer in view of U.S. Patent Application Publication No. 2003/0207558 to Bao et al (“Bao”). Applicants respectfully traverse the



Examiner's rejections. If an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is also non-obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claims 1 and 12, as amended, are in condition for allowance. Applicant therefore respectfully submits that claims 3-7 and 10 are allowable by virtue of their dependence on allowable claim 1, as well as by virtue of the features recited therein. Similarly, claims 14-15, 17-18 and 21 are allowable by virtue of their dependence on allowable claim 12, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Conclusion

Given the above amendments and accompanying remarks, all claims pending in the application are in condition for allowance. If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to allowance of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.

Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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Date: 3-17-04

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Enclosures: Postcard
Submission of Substitute Drawings
Substitute Drawings (5 drawings on 3 sheets)